

HOT SUMMERS AND COLD WINTERS AT WASHINGTON, D. C.

By Mr. FRANK GILLAM, of the Climate and Crop Division.

As the summer of 1898 seemed remarkably tedious, hot, and oppressive to many persons, I have compiled the accompanying table, which will be convenient for reference when discussing the extremes of weather. As we often hear the old saying, "a warm summer brings a cold winter," this table will be of interest in showing the truth or falsity of this expression so far as our Washington City climate is concerned. This table shows the monthly mean of all the minimum temperatures during the cold months—January, February, March, November, and December—and, also, the number of days on which the minimum temperatures fell to 20° F., or below. It also shows the monthly mean of the maximum temperatures for the warm months—May, June, July, August, September—and the number of days on which the maximum

temperatures rose to 90° F. or above. The observations were all made in the Signal Service or Weather Bureau thermometer shelters, elevated from 30 to 60 feet above the level of the street. During the first few years these thermometer shelters were large and roomy, but protected by a double *louver*; but, beginning with 1884, a smaller shelter and a single *louver* were used, so that the interior was better ventilated; but it is not likely that this has affected the minimum temperatures, which occur in the still air of the morning, although it may have had some influence on the maxima. It is believed that the maximum thermometers used in recent years have been more accurate than those of earlier years, which may explain the fact that there seems to have been fewer maxima above 90° of late years than formerly. So far as we can judge from this table, the summer of 1872 is the hottest since the work of the Weather Bureau began, and certainly that summer exceeded all others in its record of malarial and typhoid fevers.

Year.	Cold months, minimum temperatures.						Warm months, maximum temperatures.										Cold months, minimum temperatures.				Year
	January.		February.		March.		May.		June.		July.		August.		September.		November.		December.		
	Monthly mean.	No. days.	Monthly mean.	No. days.	Monthly mean.	No. days.	Monthly mean.	No. days.	Monthly mean.	No. days.	Monthly mean.	No. days.	Monthly mean.	No. days.	Monthly mean.	No. days.	Monthly mean.	No. days.	Monthly mean.	No. days.	
1872..	20.3	10	25.4	5	26.8	9	78.5	4	86.3	12	91.9	21	89.3	17	79.3	4	33.0	3	22.8	12	1872
1873..	23.8	8	25.4	9	31.5	4	73.4	4	86.2	10	91.1	20	84.6	9	77.6	2	32.5	0	32.5	2	1873
1874..	31.1	6	29.0	5	34.5	0	74.0	2	86.7	12	91.3	11	82.9	7	79.1	3	35.1	0	30.1	3	1874
1875..	21.7	12	19.6	17	31.5	3	74.3	1	83.0	7	85.1	7	80.0	1	74.2	1	33.7	1	30.5	5	1875
1876..	31.6	6	28.2	8	31.3	3	74.4	1	85.8	8	89.3	18	83.9	5	72.4	0	39.3	0	19.7	16	1876
1877..	21.6	11	30.9	1	32.3	4	72.0	6	83.3	4	87.0	9	86.1	7	75.4	0	38.6	0	34.9	0	1877
1878..	26.1	7	32.5	2	39.9	0	71.4	0	78.0	1	90.3	21	84.2	7	77.4	1	37.9	0	27.1	8	1878
1879..	22.6	11	26.6	7	34.6	0	75.4	1	83.3	5	87.8	13	83.9	7	74.3	0	37.0	3	33.8	2	1879
1880..	33.9	1	31.6	4	34.2	0	81.5	6	84.3	10	87.0	10	83.9	6	78.0	4	32.8	4	18.6	12	1880
1881..	20.2	15	21.3	8	33.3	0	77.2	5	80.4	3	88.2	15	88.3	12	88.2	12	34.7	0	34.3	0	1881
1882..	26.3	8	32.5	1	36.6	0	68.4	0	84.5	6	86.2	10	82.7	4	77.7	3	35.8	0	26.6	6	1882
1883..	23.8	11	29.9	0	28.6	5	74.8	1	84.8	6	87.7	13	82.5	7	74.7	0	39.4	0	29.5	2	1883
1884..	22.7	13	32.9	2	34.8	3	75.3	2	84.1	6	84.5	5	84.3	3	83.3	7	35.5	0	29.7	6	1884
1885..	24.8	11	19.5	15	26.6	9	71.2	0	80.8	4	87.9	15	82.6	6	73.6	1	38.7	0	30.4	2	1885
1886..	22.4	12	24.0	12	34.2	2	70.7	0	78.3	0	82.5	3	82.0	3	78.5	1	36.8	0	22.9	13	1886
1887..	23.5	12	31.1	3	30.8	0	78.2	0	81.0	4	89.0	13	82.0	4	74.3	1	35.6	0	29.8	3	1887
1888..	22.7	13	27.9	6	29.0	7	71.3	0	82.5	8	82.5	4	85.5	8	69.7	0	39.9	0	29.9	4	1888
1889..	32.0	0	24.7	7	35.1	0	74.8	2	79.1	1	83.4	4	81.3	1	73.4	0	39.3	0	36.3	0	1889
1890..	35.8	2	35.7	0	32.7	5	73.1	0	84.3	5	84.5	9	82.0	2	76.0	1	38.8	0	27.4	6	1890
1891..	30.5	0	34.3	2	32.4	3	70.6	0	81.2	4	80.6	0	82.7	5	79.8	1	34.4	2	33.3	3	1891
1892..	24.5	9	29.7	5	30.1	1	73.8	0	85.2	7	85.4	8	85.7	6	76.2	0	36.5	0	26.1	10	1892
1893..	16.5	21	27.4	4	32.4	2	72.0	0	81.5	5	87.1	10	84.9	6	74.5	0	35.4	0	29.6	3	1893
1894..	31.1	1	28.2	4	38.5	1	75.7	0	84.4	11	88.1	15	83.2	4	80.0	4	36.5	0	29.8	3	1894
1895..	24.7	9	18.3	16	33.7	0	71.9	4	84.6	5	82.1	4	87.6	11	83.0	8	38.3	0	31.5	5	1895
1896..	26.5	4	28.2	5	29.4	5	78.6	8	79.9	2	85.3	8	86.0	10	78.1	4	40.5	0	26.9	7	1896
1897..	23.2	9	29.4	1	36.2	0	73.3	0	78.9	2	85.5	6	83.3	2	79.7	5	37.3	0	30.5	2	1897
1898..	29.6	2	25.9	7	40.4	0	73.9	1	84.1	9	87.9	15	85.7	11	81.4	5	35.6	0	.....	.....	1898

A FORM FOR THE RECORD OF CLOUD OBSERVATIONS.

By G. W. RICHARDS and C. ABBE.

The Editor has received from Mr. G. W. Richards, the enthusiastic observer of clouds at Maple Plain, Minn., a copy of his very complete record for 8 a. m. and 8 p. m., seventy-fifth meridian time, for the month of September, 1898. This is given in tabular form and is accompanied by numerous circular figures showing the cloud directions, similar to those published in the MONTHLY WEATHER REVIEW for March, 1898, page 106, and Chart XII. In place of this latter style of illustration, which is easy enough to sketch in the daily book of observations, but is rather expensive to publish, it is quite customary for observers to merely record in writing or symbols the names of the visible clouds and their direction of motion. However, a record of this kind is not sufficiently graphic to easily give a comprehensive view of the daily succession of cloud phenomena. Mr. Richards' tabular form is better, but it occurs to the Editor that the following slight modification of his table will be very helpful to the student and constitute a useful form for daily record by the observer, although it requires considerable space in printing. The idea consists simply in devoting a page or two of the original manuscript record entirely to the cloud work of the month. If observations are made hourly a page would be needed for

each day. We give below two specimen pages. The first is that compiled by the Editor from Mr. Richards' morning and evening records during September, 1898; the second is the record for each hour of one day, Friday, October 15, 1869, at the Cincinnati Astronomical Observatory, where an hourly record was kept up for about one year by the Editor and Prof. Thomas Russell. The monthly form shows the sequence of cloud formation in connection with the movement of high and low areas. The hourly form shows the diurnal sequences depending on insolation. On the left hand side of the table the names of the clouds are arranged in the ordinary order of altitude. The approximate altitudes are quoted from the fourth edition of the chart entitled Description of Cloud Forms, recently published by the Weather Bureau. These descriptions are also published in the Instructions for Observers, pp. 18-20, of the edition of 1895. The terms used at Cincinnati were nearly the same as these international terms. The remaining columns of the table show the kind, and, sometimes, also the area covered by any particular kind of cloud and the direction of motion of the clouds at each hour of observation. By always entering any one kind of cloud on its appropriate line, we are enabled to omit the abbreviations for kinds, and by glancing over the table from left to right we see easily how the kinds and quantities and

Clouds.			Abbr.	Approximate altitude, ft.	The hours of observation are 8 a. m. and 8 p. m. central time, or 7 a. m. and 7 p. m. eastern time.																											
					10th, a. m.	10th, p. m.	11th, a. m.	11th, p. m.	12th, a. m.	12th, p. m.	13th, a. m.	14th, a. m.	14th, p. m.	15th, a. m.	15th, p. m.	16th, a. m.	16th, p. m.	17th, a. m.	17th, p. m.	18th, a. m.	18th, p. m.	19th, a. m.	19th, p. m.	20th, a. m.	20th, p. m.	21st, a. m.	21st, p. m.	22d, a. m.	22d, p. m.	23d, a. m.	23d, p. m.	24th, a. m.
Sky color	.....	c	80,000	.....	.....	.....	.....	.....	c.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cirrus	.....	cs	25,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cirro-stratus	.....	cs	25,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cirro-cumulus	.....	ck	23,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Alto-stratus	.....	as	19,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Alto-cumulus	.....	ak	10,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Strato-cumulus	.....	sk	6,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cumulus	.....	k	4,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cumulo-nimbus	.....	kn	3,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Nimbus	.....	n	2,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fracto-nimbus, or scud.	.....	fn	1,500	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Stratus	.....	s	1,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fog	.....	f	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wind	.....	w	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cloud Bank	.....	cb	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Hourly record of clouds, Friday, October 15, 1899, at Cincinnati Observatory. Local mean time, civil reckoning.

Clouds.	Abbr.	Approximate altitude, ft.	Altitude.	Midnight.	1 a.m.	2 a.m.	3 a.m.	4 a.m.	5 a.m.	6 a.m.	7 a.m.	8 a.m.	9 a.m.	10 a.m.	11 a.m.	Noon.	1 p.m.	2 p.m.	3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.	8 p.m.	9 p.m.	10 p.m.	11 p.m.
Sky color	c	30,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cirrus	cs	25,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cirro-stratus	cs	25,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cirro-cumulus	ck	23,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Alto-stratus	as	19,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Alto-cumulus	ak	10,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Strato-cumulus	sk	6,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cumulus	k	4,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cumulo-nimbus	kn	3,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Nimbus	n	2,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fracto-nimbus, or scud.	fn	1,500	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Stratus	s	1,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fog	f	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wind	w	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cloud bank	cb	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

altitudes change from hour to hour and day to day. The color of the sky between the clouds is quite an important item, and is entered on the topmost column as it was always given in the Cincinnati record.

The record of local cloudiness given in these tables is assumed to refer only to that portion of the heavens within 60° of the zenith. The record of clouds within a few degrees of the horizon seems to need a separate table or circular diagrams at the bottom of the columns in this table. The mere fact that a cloud bank exists in some distant portion of the horizon may, however, be entered on the bottom line opposite cb. The abbreviations that enter the table proper are quite simple, viz, c=clear; cl.=cloudy; l.b.=light blue; d.b.=deep blue; h.=hazy; s.=smoky; n.=north; s.=south; e.=east; w.=west.

IN MEMORY OF PROF. WILLIAM FERREL.

By P. CONNOR, Observer Weather Bureau, Kansas City, Mo.

The late Prof. William Ferrel directed in his will that his library, which contained so many valuable works on meteorology and astronomy, be given to the Academy of Sciences of Kansas City, Mo., for use as long as that organization exists; but that in case of its dissolution the library should go to Park College, Parkville, Mo., about eighteen miles north of Kansas City.

The Academy of Sciences having received the library, placed it, together with the other collections of the Academy, in what is known as the "Building of the Scarritt Training School." At the present time, the Academy is holding its meetings in the new public library, and is making an effort to have Ferrel's library transferred to that building, in order to make it accessible to the public. The library consists of at least two ordinary wagon loads of bound volumes, pamphlets and manuscripts; it is almost altogether technical, and must be of little consequence in a training school for nurses and religious workers. It should be set apart and catalogued as a distinct section of the public library for public benefit, but remain, of course, the property of the Academy of Sciences, in order to comply with the provisions of the will.

It will interest many of the readers of the MONTHLY WEATHER REVIEW to learn that Professor Ferrel is buried in a very attractive location in the Cemetery at Maywood, Kansas, in a spot selected by himself not long before his death.

The modesty and simplicity which characterized Ferrel's earlier life were manifest to the last. When he realized that the closing paragraph of his life's story was being written, and that the rosy tints of the sunset of life would soon dissolve into the velvet darkness of death, his simple sensitive nature desired that no stone be erected to direct the attention of the world to the little mound beneath which he slept. Subsequently, however, his brother, Dr. Jacob Ferrel of Kansas City, honored the Professor's memory by erecting on the grave a large and handsome monument of Vermont granite. It affords me much pleasure to be able to send a photograph of the monument. (See Chart XI.)

Although Professor Ferrel's life was appropriately noticed elsewhere at the time of his death (September 18, 1891), yet nothing of the kind seems to have been published in the MONTHLY WEATHER REVIEW, and I therefore venture to submit the following brief items.

Some biographical sketches in possession of his nephew, Mr. C. M. Tabler, Maywood, Kans., state that Bethany College, West Virginia, offered him the chair of mathematics when he graduated, in 1844, but for some unaccountable reason the offer was refused, and instead, Ferrel went west, to Liberty, Mo., and there engaged in school teaching for two years. Thence he went to Allensville, Todd County, Ky., and taught a private school for two or three years. From Allensville he was called to take charge of a commercial and high